

DRAWING AMENDMENTS

There are no amendments to the drawings.

REMARKS

The following claims were pending in the application: 1 – 19 and 94 - 111

The following claims have been amended: 1, 17, 94, 96, 107 and 110

The following claims have been cancelled without prejudice: 20 - 93

The following claims have been added: N/A

As a result of the foregoing Amendment, the following claims remain pending in the application: 1 – 19 and 94 – 111.

RESPONSE TO CLAIM OBJECTIONS

**The Rejections under 35 U.S.C. § 101**

The Examiner has rejected the instant claims, 1-19 and 94-111, because the claimed invention is allegedly directed to non-statutory subject matter. Applicant has amended the instant claims to include a light measurement device and microprocessor and respectfully submits that the instant claims constitute statutory subject matter. Support for the amendment may be found in the specification (see, for example, paragraphs 28, 54, 56).

The amended claims satisfy the machine prong of the machine-or-transformation test articulated by the Court of Appeals for the Federal Circuit in *In Re Bilski*, 545 F.3d 943, 953 (Fed.Cir. 2008) and *Prometheus Laboratories, Inc. v. Mayo Collaborative Services*, 2009 WL 2950232 at \*4 (C.A. Fed. (Cal.)).

According to the Court of Appeals for the Federal Circuit, “[t]he machine-or-transformation test is a ‘two-branched inquiry,’ i.e., the patentee ‘may show that a process claim satisfies § 101 either by showing that his claim is tied to a particular machine, or by showing that his claim transforms an article.’” *Prometheus* at \*4 (quoting *In Re Bilski* at 961).

The machine-or-transformation test involves two further inquiries. First, the use of a specific machine or transformation of an article must impose meaningful limits on the scope of the claim. Second, the involvement of the machine or transformation in the claimed process must not merely be an insignificant extra-solution activity. *Bilski* at 961-962; *Prometheus* at \*5.

The present invention satisfies the machine prong of the machine-or-transformation test in that, for example in claim 1, a light measurement device is utilized in step (a) to obtain reflectance values and step (b) is tied to a microprocessor that applies the algorithm. Both steps are central to the claimed process. Obtaining a measurement of reflected light is a central step, which cannot be done without the aid of some kind of machine from which to obtain numerical values corresponding to the wavelengths of light reflected from the water. This step cannot simply be done by mere inspection, as the *Prometheus* Court noted in its discussion of the “determining step” of the claims at issue. *Prometheus* at \*9. Furthermore, this step does not merely comprise data-gathering. Rather, this step involves determining the specific wavelengths to measure. The light measurement device discriminates certain wavelength ranges from the broad, entire spectrum of available wavelengths. Accordingly, the use of the light measurement device is not an “extra-solution” activity.

Similarly, the determining step, in which levels of coliform or E. Coli in a body of water are determined, is a central step in the claimed process. In *Prometheus*, the CAFC found that the “determining” step of the claimed method was transformative *and central* to the claimed method. *Prometheus* at \*9. The claims in *Prometheus* involved determining levels of certain chemicals in a subject. Like the claimed methods in *Prometheus*, the claimed method in the present invention involves determining levels of a substance in a ‘subject.’ Thus, the determining step, in which an algorithm is applied by a microprocessor to determine the levels of coliform or E. Coli in a given body of water, is central to the claimed method.

Accordingly, because the claimed process involves the use of two specific machines, at two central steps of the claimed process, which impose meaningful limits on the claim’s scope, and because they are tied to a central step of the claimed process, the present invention satisfies the machine prong of the machine-or-transformation test. Applicant respectfully submits that the claimed invention is drawn to patentable subject matter.

### **The Rejections under 35 U.S.C. § 103**

The Examiner has rejected claims 1-5, 94, 96, 97, 105, 109, and 110 as being unpatentable over Turdukulov and Subramaniam et al. Specifically, the Examiner has reasoned in part:

Turdukulov et al. does not show determining an amount of bacteria from the water.

Subramaniam et al. shows a multispectral classification scheme to detect cyanobacterial in satellite data, SeaWiFS imagery, even in waters as optically complex as South Atlantic Bight, (abstract). Subramaniam et

al. shows optical modeling incorporating reflectance data at multiple wavelengths and the amount of light detected...

The Examiner further stated that it would have been obvious to one of ordinary skill in the art at the time of the instant invention to modify the method of quantifying water in quality parameters using remote sensing such as imaging spectrometry by Turdukulov et al. by utilizing the optical modeling and classification scheme of Subramaniam et al. Therefore, one of ordinary skill in the art would recognize the claimed process as a combination of routine applications that are well known in the art.

Applicant respectfully submits that the present invention does not represent a combination of the teachings found in the cited prior art. Specifically, Subramaniam merely teaches a SeaWiFS optical model to detect the presence of cyanobacteria at moderate concentrations utilizing five normalized wavelengths within one range: 412nm-555nm. In contrast, the present invention teaches using at least three wavelengths within three different ranges, using LANDSAT TM. Subramaniam teaches determining normalized wavelength reflectance values for each wavelength, then determining a classification scheme containing three criteria from which to determine the presence of *Trichodesmium* based upon empirical observations and model results.

In contrast, the present invention involves determining an approximate amount of coliform in a body of water, not the *presence* of coliform. Moreover, Subramaniam does not teach obtaining a measurement of light from at least three wavelength ranges, for example, as in claim 1 of the present invention: (i) from about 0.53  $\mu\text{m}$  to about 0.60  $\mu\text{m}$  ; (ii) from about 0.63  $\mu\text{m}$  to about 0.69  $\mu\text{m}$ ; and (iii) from about 0.76  $\mu\text{m}$  to about 0.90  $\mu\text{m}$ , and relating *all the values* for the amount of light in the wavelength ranges to

the amount of coliform in the water. Subramaniam simply provides for individually calculating a normalized reflectance value for five wavelengths, 0.412  $\mu\text{m}$ , 0.443  $\mu\text{m}$ , 0.490  $\mu\text{m}$ , 0.510  $\mu\text{m}$ , and 0.555  $\mu\text{m}$ . The value is then used to determine whether the cyanobacteria is present in the water at moderate chlorophyll concentrations in SeaWiFS imagery. (Subramaniam page 116) Subramaniam does not teach determining an approximate, *quantitative amount* of the bacteria, as in the present invention by relating all the values (or, amounts of light) to amount of coliform in the water.

Applicant respectfully submits that because Subramaniam does not teach a method for determining a quantitative value for the amount of bacteria present in a given body of water, the present invention would not have been obvious to one skilled in the art as a result of combining Turdukulov and Subramaniam. Accordingly, Applicant respectfully submits that the present claims are not unpatentable under Turdukulov in view of Subramaniam and that the claims are properly allowable.

### **The Double Patenting Rejection**

The Examiner has rejected claim 1-19 and 94-111 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 7,132,254. The Examiner has further provisionally rejected claims 1-19 and 94-111 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 18-34 of copending Application No. 11/499,288. Applicant is submitting terminal disclaimers with this response regarding the double patenting

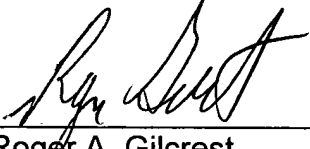
rejections. Accordingly, Applicant respectfully submits that the claims are properly allowable.

CONCLUSION

In view of the foregoing amendment and accompanying remarks, Applicant respectfully submits that the present application is properly in condition for allowance and may be passed to issuance upon payment of the appropriate fees.

Telephone inquiry to the undersigned in order to clarify or otherwise expedite prosecution of the subject application is respectfully encouraged.

Respectfully submitted,

Date: October 26, 2009 By:   
Roger A. Gilcrest  
Registration No. 31,954  
Schottenstein, Zox & Dunn Co., L.P.A.  
250 West Street  
Columbus, Ohio 43215  
P: (614) 462-1055  
F: (614) 222-3437  
Email: rgilcrest@szd.com